Journal of Infection and Public Health (2016) 9, 528—531

http://www.elsevier.com/locate/jiph

SHORT COMMUNICATION

An unusual complication after interventional cardiology reveals and infrequent condition: Idiopathic CD4 deficiency

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Received 23 July 2015; received in revised form 27 October 2015; accepted 11 December 2015

KEYWORDS
Herpes zoster;
Esophageal candidiasis;
Coronary angiography;
Percutaneous coronary intervention;
Idiophatic CD4 T-lymphocytopenia

Summary Herpes zoster (HZ) is of rare occurrence after interventional procedures with few events reported until now. A 74 year-old man with a past medical history of idiopathic thrombocytopenic purpura, splenectomy, autoimmune hemolytic anemia, and polymyalgia rheumatica developed HZ on the right median nerve 7 days after he underwent a coronariography for managing an acute coronary syndrome. He evolved with cutaneous dissemination and required intravenous acyclovir therapy. Laboratory evaluation disclosed a previously unknown idiophatic CD4 lymphocytopenia. HZ should be added to the list of complications after interventional cardiology and associated immunosuppressive factors ruled out.

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http://dx.doi.org/10.1016/j.jiph.2015.12.005

Introduction

Herpes zoster (HZ) is a common event in the population especially among elderly people, but rarely reported after thoracic, neurological or spinal interventions or after extraction of the third molar [1—5]. For instance, 4 cases were described in one center during one year (incidence not reported) among patients undergoing spinal surgery 2 days to 5 months after the procedure [1]. Involved dermatomes have been related to the surgical site suggesting that trauma was the triggering factor [1—3]. Of the 8 postsurgical HZ cases identified in the references reported, only 2 suffered from immunesupression (multiple myeloma and methotrexate use) [1—5]. In this report, we describe a case of herpes zoster that appeared after a percutaneous coronary intervention (PCI) made by transradial catheterization (TRC). To the best of our knowledge this is the first description on the literature that associates HZ with arterial catheterization. This infrequent complication revealed a previously undiagnosed and rare immunosuppressive condition.

Case report

A 74 year-old man with a past medical history of dyslipidemia, idiopathic thrombocytopenic purpura and splenectomy, autoimmune hemolytic anemia, and polymyalgia rheumatica was admitted in our institution on September 2013 by severe unstable angina. He reported recurrent episodes of esophageal candidiasis in the last 3 years with several negative HIV tests. These episodes were assumed secondary to prednisone prescribed for polymyalgia rheumatic (dose range 5—30 mg/day). The patient was receiving at the time of admission 5 mg/day of prednisone. Initial evaluation discarded myocardial infarction by EKG and enzymes, and a CT scan also ruled out aortic aneurysm and pulmonary embolism. An upper gastrointestinal endoscopy showed mild esophageal candidiasis. Laboratory evaluation indicated mild anemia (hemoglobin 12.2 g/dL), normal white blood cell count (10 000/μL), normal lymphocyte count (1399/μL), thrombocytopenia (86 000/μL), and elevated erythrocyte sedimentation rate (47 mm/h), lactic dehydrogenase (309 U/L, reference <250), and C-reactive protein (44.3 mg/dL, reference <5 mg/dL). A myocardial perfusion scan demonstrated inferior wall myocardial ischemia. A coronariography performed by TRC revealed a significant lesion at the right dominant coronary artery

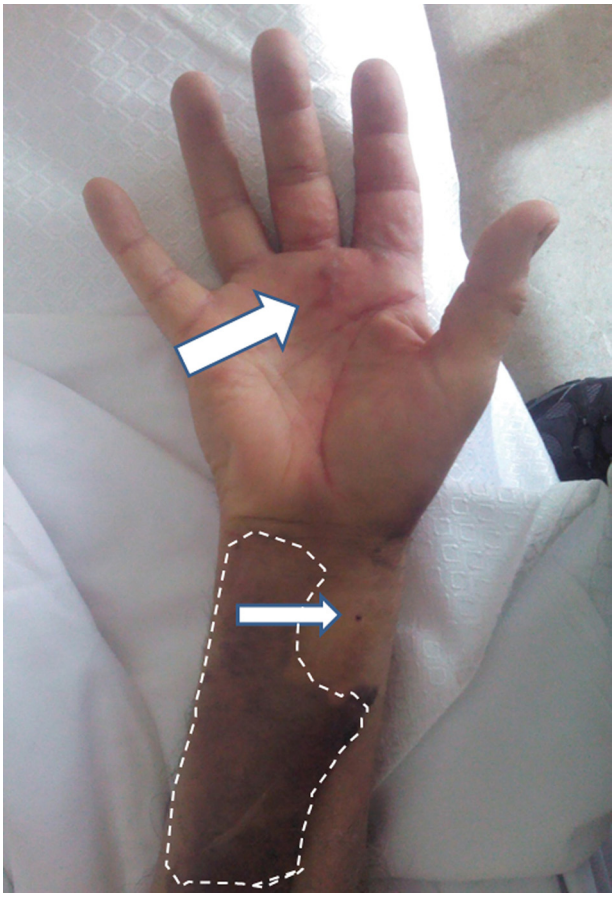

Figure 1 Vesicular rash that follows median nerve distribution (white arrow) with a puncture on the radial artery (thin white arrow) and ecchymosis involving the forearm (white broken line). Patient gave an informed consent to reproduce this image.

that was resolved by angioplasty with a drug-eluting stent. The patient was discharged to a general ward with standard treatment including aspirin, clopidogrel, and statins. Daily prednisone dose was increased without apparent reason to 40 mg per one day and then reduced to 20 mg.

Three days after the procedure the patient developed a sudden and intense electrical pain in the right forearm in relation to the vascular access. Physical examination showed local ecchymosis but no other vascular or neurological complications. At the seventh day of TRC a vesicular rash was detected distally to the vascular access following median nerve distribution (Fig. 1), pain increased and the diagnosis of HZ was made based on clinical criteria (right median nerve dermatome). Treatment with oral valacyclovir (3 g/day) was initiated and prednisone suspended. The patient referred no previous episodes of HZ and HIV testing was again negative. After 72 h of treatment lesions disseminated compromising also the back (dorsal

Figure 2 Picture taken after 5 day of therapy showing initial regression. Patient gave an informed consent to reproduce this image.

and lumbar regions) but without systemic symptoms. Intravenous acyclovir (10 mg/kg/dose/8 h) replaced oral valacyclovir. The patient recovered progressively, no new lesions appeared after 3 days of iv acyclovir therapy and pain decreased (Fig. 2). He completed a full course of 14 days of iv acyclovir. Fluconazole was also indicated to treat esophageal candidiasis. Despite a favorable evolution, discharge was postponed due to the appearance of a severe thrombophlebitis on the left forearm secondary to a peripheral venous catheter that required treatment with iv vancomycin and oral rifampin. No agent was identified. An immunological evaluation demonstrated a low CD4 count (13%, 212/μL), absent B lymphocytes (0%), but normal circulating immunoglobulins. The patient was discharged after 51 days of hospitalization. A lymphocyte subpopulation control 3 months after his initial admission still revealed low CD4 (291/μL) and B lymphocytes (2 μ/L) counts. The patient is currently receiving prednisone (7.5 mg/day) for treating polymyalgia rheumatic and therapy for postherpetic neuralgia with pregabalin (75 mg/day).

Discussion

Local vascular problems, pain or nerve damage include the list of known complications described for TRC [6]. HZ has been rarely described after surgical interventions and to the best of our knowledge this is the first report that associates an interventional cardiovascular procedure with HZ. TRC most probably represented an injury acting as a triggering factor for virus reactivation as described for different surgical procedures [1—5]. Time elapsed between TRC and skin eruption (7 days) is in accordance with cases described after surgical procedures where most cases are described between 2 and 14 days after tissue manipulation [1—5].

Known factors associated with post operative HZ include older age, corticoisteroid use and underlying medical conditions associated to immunosuppressive states [1—5]. In some cases no other factors besides surgical trauma or puncture have been identified [3].

Rash resolution without dissemination is common among those affected by HZ. In clear contrast, our patient developed disseminated herpes zoster even after valacyclovir treatment and required prolonged iv acyclovir therapy to stop progression.

Several conditions appear to be combined that explain this unusual manifestation and prolonged course in our patient including increased corticosteroid doses after TRC, older age, and a previously undiagnosed chronic immunossuppresive condition. Idiophatic CD4 lymphocytopenia (ICL) is a rare condition characterized by persistent low CD4 counts (<300/μL) associated to opportunistic infections and/or autoimmune diseases without a known cause [7—9]. Natural Killer or lymphocyte B cell depletion has also been observed but despite the role of B lymphocytes in immunoglobulin synthesis, no humoral immunodeficiency is present [7—9]. ICL is of uncertain pathogenesis and prognosis is variable [7—9]. Mucosal candidiasis and HZ are part of the infections observed as happened in our case [7—9]. This condition is suggested in our patient by the presence of different autoimmune diseases (idiophatic thrombocytopenic purpura, polymyalgia rheumatic and hemolytic anemia) coupled with low CD4, lymphocyte B counts and different opportunistic or viral infections.

The most important differential diagnosis of ICL, HIV infection was ruled out. Glucocorticoids may explain a CD4 lymphocytopenia, but CD4 cell depletion is dose-related and values <500/μL has not been reported when prednisone equivalent daily dose is ≤10 mg/day [10]. Still, CD4 levels were low

during a post-discharge control when low doses of prednisone were in use.

A CD4 cell count <200/μL is considered for initiating chemoprophylaxis against *Pneumocystis jiroveci* infection, and recurrent episodes of varicella zoster infection or cryptococcal meningitis may require prolonged suppressive therapy [9].

In conclusion, although rare, HZ may be part of the local complications of coronary angiography and occurs shortly after local injury. Evolution may be influenced by known or undiagnosed host factors that could force an unusual course. The possibility of an underlying although rare predisposing condition, should be considered.

Funding

No funding sources.

Competing interests

None declared.

Ethical approval

Not required.

Acknowledgements

None to declare.

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